DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 69.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-003636
Date Inspected: 08-Aug-2008

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

OSM Arrival Time: 2230
OSM Departure Time: 730
Location: Shanghai, China

CWI Name:	See below			**CWI Present:**	☑ Yes	☐ No	
Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Approved WPS:**	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: OBG Fabrication

Summary of Items Observed:

Caltrans Quality Assurance (QA) Inspector, Mr. Paul Dawson, arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China, for the purpose of monitoring welding and fabrication of the San Francisco / Oakland Bay Bridge (SFOBB) components. The QA Inspector observed the following:

Orthotropic Box Girder (OBG) and Tower Fabrication:

QC Inspector Mr. Li Yan Hua

Bay 1

PMT #1:

The QA Inspector monitored welding of closed rib Production Monitoring Test (PMT) representing deck plates DP388-001 and DP535-001 which were welded today starting at approximately 0100 hours using gantry #2. Each of the three closed ribs was welded to a separate baseplate. The QA Inspector observed six ZPMC welders using welding procedure specification WPS-B-T-2342-U1(Urib)-4 using the gas metal arc welding process for the root pass and submerged arc welding process for the cover pass of partial penetration groove welds on six PMT closed rib welds at the same time. ZPMC has multiple flux cored welding manipulators attached to a movable gantry that runs on a track along the length of the stiffener plates. The QA Inspector observed a welding travel speed of approximately 536 mm per hour for the root passes and 517 mm for the cover passes. As the welding commences, each of the welders is responsible for one of the welding heads. Welder Mr. Xu Guo Yin, stencil 059443

completed the root pass of weld #1 with a welding current of approximately 380 amps and 30.8 volts and the cover pass welding current of approximately 680 amps and 24.2 volts. Welder Mr. Chen Jie, stencil 059468 completed the root pass of weld #2 with a welding current of approximately 380 amps and 30.6 volts and the cover pass welding current of approximately 685 amps and 25.2 volts. Welder Mr. Xiang Huan Feng, stencil 059416 completed the root pass of weld #3 with a welding current of approximately 380 amps and 31.2 volts and the cover pass welding current of approximately 680 amps and 25.1 volts. Welder Mr. Xiang Jie, stencil 0593781 completed the root pass of weld #4 with a welding current of approximately 350 amps and 30.3 volts and the cover pass welding current of approximately 690 amps and 26.0 volts. Welder Ms. Gao Xin Dong, stencil 059361 completed the root pass of weld #5 with a welding current of approximately 390 amps and 30.6 volts and the cover pass welding current of approximately 680 amps and 24.9 volts. Welder Mr. Jiang Ting Goang, stencil 062265 completed the root pass of weld #6 with a welding current of approximately 370 amps and 30.4 volts and the cover pass welding current of approximately 680 amps and 25.0 volts.

ZPMC QC Inspector Mr. Li Yan Hua performed visual inspection of the final welds and he rejected weld #6 for insufficient fusion and three new closed ribs were installed on gantry two. Each of these three ribs are tack welded to separate baseplates.

PMT #2:

The QA Inspector monitored welding of closed rib Production Monitoring Test (PMT) representing deck plates DP388-001 and DP535-001 which were welded today starting at approximately 0100 hours using gantry #2. Each of the three closed ribs was welded to a separate baseplate. The QA Inspector observed six ZPMC welders using welding procedure specification WPS-B-T-2342-U1(Urib)-4 using the gas metal arc welding process for the root pass and submerged arc welding process for the cover pass of partial penetration groove welds on six PMT closed rib welds at the same time. ZPMC has multiple flux cored welding manipulators attached to a movable gantry that runs on a track along the length of the stiffener plates. The QA Inspector observed a welding travel speed of approximately 536 mm per hour for the root passes and 513 mm for the cover passes. As the welding commences, each of the welders is responsible for one of the welding heads. Welder Mr. Xu Guo Yin, stencil 059443 completed the root pass of weld #1 with a welding current of approximately 360 amps and 29.9 volts and the cover pass welding current of approximately 680 amps and 25.0 volts. Welder Mr. Chen Jie, stencil 059468 completed the root pass of weld #2 with a welding current of approximately 350 amps and 30.5 volts and the cover pass welding current of approximately 675 amps and 24.4 volts. Welder Mr. Xiang Huan Feng, stencil 059416 completed the root pass of weld #3 with a welding current of approximately 365 amps and 30.7 volts and the cover pass welding current of approximately 685 amps and 25.1 volts. Welder Mr. Xiang Jie, stencil 0593781 completed the root pass of weld #4 with a welding current of approximately 370 amps and 30.5 volts and the cover pass welding current of approximately 690 amps and 24.9 volts. Welder Ms. Gao Xin Dong, stencil 059361 completed the root pass of weld #5 with a welding current of approximately 360 amps and 30.8 volts and the cover pass welding current of approximately 680 amps and 25.3 volts. Welder Mr. Jiang Ting Goang, stencil 062265 completed the root pass of weld #6 with a welding current of approximately 370 amps and 30.4 volts and the cover pass welding current of approximately 680 amps and 25.3 volts.

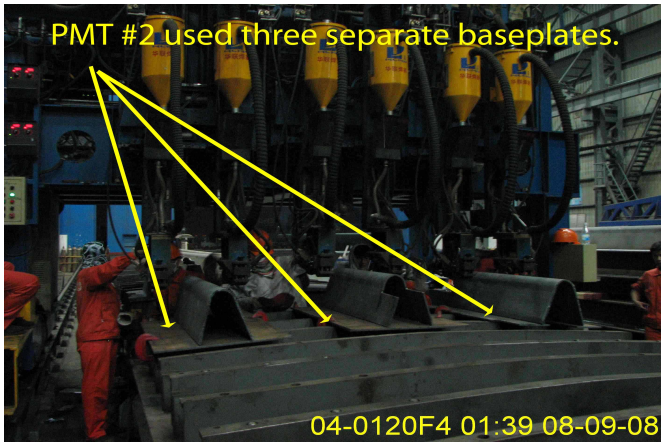
The QA Inspector performed random visual inspection of the root pass and cover passes and items observed appear to comply with project specifications. Following completion of the welding ZPMC QC CWI Inspector Mr. Li Yan Hua marked a 500 mm length of the welds as being the areas that are to be representative of this PMT test

on each of the welds. The QA Inspector observed ZPMC NDE inspector Mr. Xue Hai Rong performing ultrasonic partial penetration evaluation of each of the six welds in the areas where Mr. Bo had marked for PMT testing. Following Mr. Rong's UT acceptance the QA Inspector marked a total of 15 locations where macroetch samples are to be obtained. ZPMC then cut and prepared the macroetch samples. ZPMC QC CWI Inspector Mr. Li Yan Hua and ABF representative Mr. Chang Baoqian both visually inspected these macroetch samples and documented their acceptance on the ZPMC "Production Monitoring Test Plate Inspection Report sheet dated 8-09-08. The QA Inspector visually inspected and dimensionally measured the penetration each of these macroetch samples and items observed by the QA Inspector appear to comply with project specifications.

The QA Inspector recorded information for all fifteen PMT specimens on an Excel spreadsheet titled "SAS OBG PMT Macroetch Log" and a copy of this file is posted on the Caltrans "Team China" internal common drive which is accessible to all Quality Assurance personnel including Task Leaders and Structural Materials Representatives.

Assembly bay #2

During the previous shift QA Inspectors B95 and B102 performed ultrasonic inspections of 136 tack weld locations on deck panel DP026-002 and DP068-001. This QA Inspector performed measurements and recorded the areas that had previously been identified as having ultrasonic indications. A total of thirty one (31) locations were marked on on DP026-002 and six (6) locations on DP068-001. The ultrasonic data was recorded on data sheets titled: "U-rib to deck panel – tack Weld Assessment" which were scanned and emailed to the dayshift task leader.



Summary of Conversations:
See above.
Comments
This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Ady Velasco 13816942685, who represents the Office of Structural Materials for your project.

Inspected By: Dawson,Paul Quality Assurance Inspector

WELDING INSPECTION REPORT

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Reviewed By: Carreon,Albert QA Reviewer